Granicus Encoding Appliance

The Windows 7 Embedded Granicus Encoding Appliance is designed and built to provide government organizations with a complete streaming solution. Each pre-configured Appliance is delivered ready to stream. Full Appliance control is available through a web browser or locally installed client application.

Physical Specifications

The Granicus Analog Encoding Appliance will mount in virtually all 4 or 2-post racks. The Appliance front mounts much like a switch or router. It requires 2U (3.5”) of rack space, is 17.7” deep, and weighs 35lbs. Rail kit is standard. Tower kit is not currently available. Sound output is less than 65db.

Ideally installation will be in a secure, climate controlled environment.

Dimensions
- 17.7”D x 17.2”W x 3.5”H
- 2U High

Mounting
- Front Mount
- Rail Kit (standard)

Weight
- 35 lbs

Sound Output
- Less than 65db

Front View
Power Requirements

Power requires a single 120volt or 240volt NEMA 5-15 plug. The power under load is 120 Watts and 0.965 Amps.

- 120volt NEMA 5-15 plug
- Power under load is 120 Watts and 0.965 Amps

<table>
<thead>
<tr>
<th></th>
<th>Idle</th>
<th>Load</th>
<th>Startup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watts</td>
<td>40</td>
<td>120</td>
<td>96</td>
</tr>
<tr>
<td>Amps</td>
<td>0.266</td>
<td>0.965</td>
<td>0.755</td>
</tr>
<tr>
<td>kVA</td>
<td>0.04</td>
<td>0.120</td>
<td>0.096</td>
</tr>
<tr>
<td>BTU/hr</td>
<td>136</td>
<td>408</td>
<td>326</td>
</tr>
</tbody>
</table>

Ideally, installation will be to an uninterruptable power supply (UPS) supplied by you. A UPS such as the APC Smart-UPS SC 450VA will provide approximately 40 minutes of run time. Appliance functionality requires the device be powered on at all times.
Storage

The Granicus Encoding Appliance can be configured to store up to 1 TB of your most recent archived content. Standard encoding bit rates use approximately 1 GB of disk space for every 2 hours of content. Granicus Cloud Storage is unlimited.

- 2 TB
- Approximately 2000 hours at standard bit rates

Network Bandwidth and Intelligent Routing

With the Granicus H.264 solution we use push streaming. Streaming at standard bitrates requires 650Kbps upstream.

In addition to a single stream to Granicus for unlimited public viewing, the Appliance is capable of providing local live and on-demand Unicast streaming for up to 50 internal viewers. All initial viewing requests are made on a Granicus hosted web page which examines the public IP address of the request. Viewers that are determined to be public, or outside the local network, are served the stream directly by Granicus and internal viewers are transparently redirected to the Appliance on the local network.

Granicus is also able to provide 24 x 7 streaming if local bandwidth requirements are met and QOS settings are in place. See your Sales Engineer for more details.

For organizations that use Granicus VoteCast or need to support more than 50 concurrent streams, Granicus offers the Performance Accelerator which moves the local distribution components on to a dedicated internal streaming device.

- Granicus uses client public facing IP addresses to determine if viewer is public or internal
- Internal viewers are redirected to the Granicus Encoding Appliance for live and on-demand streaming
- Only available on the Encoding Appliance when not using VoteCast to capture real-time voting data.
- Limited to 50 concurrent live and on-demand streams

Internal Viewership

- Internal viewers will view streams from either the Granicus Encoding Appliance, Performance Accelerator or directly from the Granicus DataCenter.

Voting System

- The Granicus Encoding Appliance can be used for real-time voting capture when combined with a purchase of VoteCast.

Operating System Requirements

The Granicus Encoding Appliance runs Microsoft Windows 7 operating system. It is designed to run as a stand-alone machine, not joined to your domain. We have found that joining the Encoder to a domain
can produce unintended results (Group Policy restrictions, security restrictions, Windows Firewall blocking traffic, restricted logon hours, etc.).

Network Location, Firewall, and Security

The Appliance is generally installed on an internal network. If that will not work, it can also be installed on a DMZ, separate network, or VLAN. To support local distribution, internal viewers need to have access to the Appliance. If placing on a separate network, access can be restricted so that internal viewers have one way access to the Appliance.

The Granicus Encoding Appliance needs to be allowed to bypass all content filtering and proxy servers. The firewall needs to allow unrestricted outbound TCP connections from the Granicus Encoding Appliance to any destination ports within the Granicus IP ranges (207.7.154.0/24 & 209.237.241.0/24). If the network includes an authenticating proxy server, the Appliance must be allowed to bypass authentication.

- Internal Network
- DMZ
- Separate Network or VLAN

IP Filtering

- 207.7.154.0/24
- 209.237.241.0/24

The following table and diagram describe the network ports, connection direction, and communication protocols used by the Granicus Encoding Appliance. If the direction of the connection is outbound, the port indicates the port number of the application’s remote host connection. If the direction of the connection is inbound, port indicates the port number of the application’s local host listening for incoming connections.

<table>
<thead>
<tr>
<th>Port/Direction/Protocol</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>80/Outbound/TCP</td>
<td>To Granicus, for file transfers and MediaManager access</td>
<td>Mandatory</td>
</tr>
<tr>
<td>80/Inbound/TCP</td>
<td>From the web browser on the local network; used to start and stop the Encoder through MediaManager</td>
<td>Mandatory</td>
</tr>
<tr>
<td>443/Outbound/TCP</td>
<td>To Granicus, for uploading files through MediaManager</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Port Range</td>
<td>Description</td>
<td>Required</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>80/443/Outbound/TCP</td>
<td>To LogMeIn.com for LogMeIn remote access, patching and monitoring; To Microsoft for Windows Updates.</td>
<td>Mandatory*</td>
</tr>
<tr>
<td>1935/Outbound/TCP</td>
<td>To Granicus (Reserved Functionality) To Performance Accelerator (optional component)</td>
<td>Mandatory</td>
</tr>
<tr>
<td>6969/Inbound/TCP</td>
<td>From all client machines: LiveManager, VoteCast, VoteCast Display</td>
<td>Mandatory</td>
</tr>
<tr>
<td>7777/Outbound/TCP</td>
<td>To Granicus, for application installation and updating</td>
<td>Mandatory</td>
</tr>
<tr>
<td>7777/Inbound/TCP</td>
<td>From LiveManager workstations to allow configuration of LiveManager and encoder preferences</td>
<td>Mandatory</td>
</tr>
<tr>
<td>80/443/1935 Inbound/TCP &amp; 1935 Inbound UDP</td>
<td>From users within your internal network, to view live and archive video streams and to download video</td>
<td>Mandatory, Internal network only.</td>
</tr>
</tbody>
</table>
Streaming Formats

Live streaming is in H.264 format using Flash and HTML5. Platforms supported include PC, Mac, iOS (iPhone, iPad), and Android devices with the Adobe Flash plugin. On-demand streaming is supported for most Android devices regardless of whether the Flash plugin is installed.

- **Encoding Formats**
  - H.264 Adobe® Flash®
  - H.264 HTML5

- **Bandwidth**
  - 650Kbps Live and On-Demand Streams

Audio/Video Source Requirements

Granicus recommends that there be at least one method of redundancy in your AV setup. We have seen best practices of a third party DVR in the instance that there is ever an issue with the encoder.

The Granicus Encoding Appliance must be installed in a location that allows for connection to an analog audio/video source. The following connections are supported:
Video Inputs – Single Channel

- Composite (BNC x 1)
- S-Video (Includes BNC to mini-DIN adapter)
- Component (BNC x 3)
- NTSC & PAL supported

Audio Inputs

- Balanced stereo (XLR x 2)
- Unbalanced stereo (RCA x 2)
- Stereo & mono supported

Maximum Resolution

- 480i

The ability to run A/V cabling over long distances depends on the quality of the cable, length, connections and other electrical noise that might possibly interfere with the signal. For distances over 50 feet, Granicus recommends using a product such as a balun which will transmit the signal over standard unshielded twisted pair cabling (Cat 5, 6 or 7) with a rated distance of up to 2200 feet. This is a point-to-point solution and not IP based. It requires a standard RJ-45 at each end of the cable. If desired, Granicus can provide standard baluns as part of the solution. Other options for extending A/V are to use fiber and a media converter or a distribution amplifier. When other methods are used besides standard baluns, Granicus recommends consulting with a reliable A/V vendor for appropriate recommendations.
Baluns

Composite Baluns

Included with Composite Video Baluns:
1) 1-Pair Intellix AVO-V1AZ Baluns
2) 1-3FT RCA Audio/Video Cable
3) 1-BNC Male to RCA Female Adapter

Connect the outputs to the included RCA cable and attach that to the breakout cable that attaches to the encoder. Use the BNC to RCA adapter if necessary.

S-Video Baluns

Included with S-Video Baluns:
1) 1-Pair Intellix AVO-SV2AZ Baluns
2) 1-3FT S-Video & RCA Audio Cable

Connect the outputs to the included S-Video/RCA cable and attach that to the breakout cable that attaches to the encoder.

Closed Captioning Support

The Granicus Encoding Appliance supports video with closed captions embedded on line 21. Captions are extracted by Granicus and displayed below the video. Post-event, captions are uploaded and become fully searchable.

- Separate customer supplied closed captioning encoder required
- Video must have captions embedded on line 21
- Granicus Encoding Appliance extracts captions that are embedded
- Video player will display captions below video

Remote Management

Granicus will monitor, support, and maintain our software on your Encoding Appliance. Granicus will provide updates to our software components when maintenance releases become available. Other server maintenance, such as performing Windows updates and maintenance of software that is not provided by Granicus will remain your responsibility. Remote support, management, patching, reporting and logging are performed using LogMeIn. If other connection methods such as a VPN connection are required due to security policies please discuss these with your Granicus representative. Installation of third-party software that is not specifically approved by Granicus may detrimentally impact the server’s performance. In extreme cases, the server may need to be reimaged to restore normal operations; in this case, a reimagining fee may be charged.

Hardware/Software Maintenance

When you purchase the Granicus Encoding Appliance, Granicus offers a 3-year maintenance plan that covers hardware failures. If a hardware defect is encountered, Granicus will replace the server at no cost to you. The replacement will arrive within 3 days of the return materials authorization by Granicus.